

What is claimed is:

1           1.     A broadband slot array antenna comprising:  
2           a common input terminal;  
3           a conductor plate having a common slot formed in a predetermined area and  
4           a plurality of slot halves being formed separately and respectively communicating  
5           with the common slot via a plurality of slot necks spaced by a predetermined  
6           distance;  
7           a plurality of feed lines, each having one terminus connected to the common  
8           input terminal, for applying power to the conductor plate at a cross coupling point;  
9           and  
10          a dielectric layer disposed between the conductor plate and the plurality of  
11          feed lines.

1           2.     The broadband slot array antenna of claim 1, wherein, when power is  
2           applied to the conductor plate, the slot halves respectively produce a plurality of  
3           electromagnetic fields having coinciding phases.

1           3.     The broadband slot array antenna of claim 1, wherein the  
2           predetermined distance is less than  $\lambda/2$ .

1           4.     The broadband slot array antenna of claim 1, wherein the plurality of  
2           feed lines each have a predetermined length from the common input terminal to the  
3           cross coupling point.

1           5.     The broadband slot array antenna of claim 4, wherein the  
2     predetermined length is  $\lambda/4$ .

1           6.     The broadband slot array antenna of claim 5, wherein the cross  
2     coupling is achieved by a conductive connection between the feed lines and the  
3     conductor plate.

1           7.     The broadband slot array antenna of claim 5 wherein the cross  
2     coupling is achieved by a capacitive coupling between the feed lines and the  
3     conductor plate.

1           8.     The broadband slot array antenna of claim 1, wherein each feed line  
2     traverses one of the plurality of slot halves.

1           9.     The broadband slot array antenna of claim 8, wherein the feed lines  
2     traverse the slot necks from one direction.

1           10.    The broadband slot array antenna of claim 8, wherein the feed lines  
2     traverse the slot necks from opposing directions.

1           11.    The broadband slot array antenna of claim 1, wherein the conductor  
2     plate is grounded.

1           12.    The broadband slot array antenna of claim 1, wherein the common  
2   slot and the plurality of slot halves exhibit one of a bowtie configuration, a dog-bone  
3   configuration, and a paddle-bowtie configuration.

1           13.    The broadband slot array antenna of claim 1, wherein each feed line  
2   is one selected from the group consisting of a microstrip, coaxial line, coplanar  
3   waveguide, and slot line.